The Journal of Administration & Economics / year 42/No 119/2019
ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

Impact of Foreign Direct Investment on Economic Growth in Jordan

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Abstract

Jordan has adopted various policies to engage foreign direct investment in light of the country's urgent need to increase economic resources, thus providing many investment opportunities for foreign investors. There is no doubt according to most studies the foreign direct investment contributes to increase economic growth rates. This paper focuses on the impact of foreign direct investment on economic growth in Jordan for the period from 2000 to 2017. Using the EViews program, relying on a set of macroeconomic variables, and using the standard analytical approach, the paper aims to identify the impact of foreign direct investment on economic growth. The paper found a positive impact of foreign investment on economic growth. Based on this result, the ultimate goal of the Jordanian government is to seek to attract more foreign direct investment to increase the rate of economic growth.
Keywords: Jordan, economic growth, foreign direct investment
JEL Classification: F21, O4.

المستخلص :

اعتمد الأردن سياسات مختلفة لإشراك الاستثمار الأجنبي المباشر في ضوء حاجة البلاد الملحة لزيادة الموارد الاقتصادية ، وبالتالي توفير العديد من الفرص الاستثمارية للمستثمرين الأجانب .ليس هناك شك في أن معظم الاستثمار الأجنبي المباشر يساهم في زيادة معدلات النمو الاقتصادي .تركز هذه الورقة على تأثير الاستثمار الأجنبي المباشر على النمو الاقتصادي في الأردن للفترة من عام 2000 إلى عام 2017. باستخدام برنامج EViews ، بالاعتماد على مجموعة من متغيرات الاقتصاد الكلي ، واستخدام المنهج التحليلي المعياري ، تهدف الورقة إلى تحديد التأثير الاستثمار الأجنبي المباشر على النمو الاقتصادي .وجدت الصحيفة أثرًا إيجابيًا للاستثمار الأجنبي في النمو الاقتصادي .وبناءً على هذه النتيجة ، فإن الهدف النهائي للحكومة الأردنية هو السعي إلى جذب المزيد من الاستثمارات الأجنبية المباشرة لزيادة معدل النمو الاقتصادي.
الكلمات المفتاحية: الأردن ، النمو الاقتصادي ، الاستثمار الأجنبي المباشر ، JEL التصنيف .

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مقبول للنشر بتأريخ 2019/3/5

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

1. Introduction

FDI has become increasingly important in the last century as the debate about the negative and positive effects of FDI flows around the world is growing. Foreign direct investment can help in development and create a better economic environment. It can support per capita income growth in the host country and expand the use of modern management and local raw materials. In addition, it can help in the development and training of human resources (Al Mihyawi, 2016). Foreign direct investment plays essential role in economic growth for developing countries to achieve faster economic growth through trade. In the 1970s, international trade grew more rapidly than FDI growth. This situation changed dramatically in the mid-1980s, when the increase in foreign investment began sharply. During this period, global FDI increased its importance through the transfer of technology and the establishment of marketing networks around the world. According to IMF data, the rate of foreign direct investment in the world increased during the second half of the 1980s at an annual average of 41 per cent (Bajo-Rubio & Muñoz, 2000).

In the next two decades after 1980s, foreign direct investment flows around the world increased by 25% during the period 1991-2009, as indicated by the World Investment Report 2010 (UNCTAD). During the same period, FDI inflows in developing countries increased by 22% Equivalent to approximately 5% of the GDP of these countries (UNCTAD, World Investment Report, 2010). By the beginning of 2010, the total inflow of foreign direct investment around the world was $ 1860 billion, equivalent to approximately 2.73% of world GDP. These flows rose during the decade to peak in 2016 at $ 2448 billion, and then declined the following year to $ 1862 billion (UNCTAD ،Databank).

The FDI inflows are important for developing countries, because they are need it for increasing and improved capital, technology, management, access to markets and job creation. Jordan is one of those countries whose successive governments have sought to encourage foreign investment and provide various incentives and a facility because of it’s a positive role in economic growth. Jordan and through the Investment Promotion Corporation have sought to provide an appropriate investment environment through restructuring the regulations, legislations and laws to ensure greater freedom of movement of Arab and foreign investors' capital and removing restrictions restricting their movement. The need for foreign investments

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

in Jordan is increasing because it hasn't natural resource, unlike most neighboring countries. Therefore, investment is more important to enhance its ability to provide job opportunities for the labor force, increase the hard currencies and increase exports, which reflects positively on the trade balance.

The importance of research:

Several studies have analyzed the effect of foreign direct investment on economic growth in Jordan. We have not been able to find any new studies dating back to the past five years. This study deals specifically with this issue, despite the recent studies on foreign investment without mentioning its impact on economic growth. The importance of the study is that it attempts to identify the impact of FDI inflows on economic growth in Jordan during the period 2000-2017, to help the decision-maker to make the appropriate decision on the economic policies to be taken in relation to foreign investment.

The research problem:

Successive governments in Jordan have made great efforts to create an appropriate investment environment that contributes to the encouragement and attraction of foreign investments for raising the rates of economic growth. However, despite all these efforts, FDI flows are still below the required level and thus their effects on macroeconomic variables are unambitious. Therefore, this study aims to answer the following question:

Are FDI flows affecting Jordan's economic growth for the period 2000-2017?

Objectives of the research:

This study aims to shed light on Jordan's foreign investment flows and to measure its impact on economic growth for the period 2000-2017.

Research hypothesis:

The study is based on the hypothesis that there is a positive effect of FDI inflows on economic growth in Jordan during the study period.

In order to prove the validity of this hypothesis, a standard model for measuring the impact of foreign direct investment on economic growth, represented by GDP, will be formulated using the EViews program to achieve the objective of the study and using some statistical tests to validate the validity of the standard model.

The layout of the paper is the following. Section 2 provides brief review of the literature on the relationship between FDI and economic

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

growth. Section 3 analyse the evolution of the FDI in Jordan in the period under consideration. Section 4 discusses the GDP in Jordan for the period 2000-2017. Section 5 offers analysis of results. Section 6 discusses the data and econometrics models, as well as the relationship between FDI and economic growth. Section 7 offers some concluding remarks.

2. Literature review:

Several studies have dealt with the impact of foreign investment on economic growth in the world in general and developing countries, including Jordan in particular. The results of the studies varied between the presences of a negative or positive effect in some of them,

Usually it is accentuated with confidence that foreign direct investment (FDI) is advantageous to economic growth in the host economy. Empirical evidence was mixed; there were still gaps in literature and studies on the impact of foreign direct investment on economic growth in general in different countries:

Christie Dike (2018), on the impact of foreign agricultural investment on sub-Saharan Africa's economic growth, demonstrated through the VECM method a positive relationship between agricultural investment and long-term economic growth (Dike, 2018).

A study by Sailesh et al. (2018) on the contribution of trade openness and FDI inflows to economic growth in Thailand showed that direct support for FDI-led growth is weak. In addition, that trade openness has played a more important role than foreign direct investment in influencing Thai economic growth (Sailesh, Kitja, & Chengchun, 2018).

The study by Pooja, Roma (2018), on the pattern of foreign direct investment in the Indian subcontinent and India's neighbors, such as Pakistan, Nepal, Bangladesh and Sri Lanka, showed that the different economic policies of the countries concerned play a role in clarifying the difference for investment (FDI) per country. In addition, the correlation between FDI and GDP and in all cases the FDI was a key factor in strengthening the economy of the study countries (Pooja & Roma , 2018) .

A study of the causal relationships between FDI, GDP, and domestic capital investment, in Saudi Arabia during the period 1970-2015 proved that, over the long term, there is a negative trend between growth Non-oil GDP and foreign direct investment (Mounir & Atef , 2018).

The study of Carbonell et al. (2018) on the Spanish economy for the period (1984-2010), entitled "Does foreign direct investment generate economic growth?", shows that there is no evidence that foreign direct

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investment stimulates economic growth, and that the entry of the EU does not have any positive effect on economic growth in Spain (Jorge & Richard , 2018).

Studies on the impact of foreign investment on economic growth in Jordan in particular can be summed up in the following studies:

The study examined the impact of foreign direct investment on economic development in Jordan for the period 1996-2008 through a standard analytical study. The study concluded that there is a statistically significant effect of these investments on GDP, according to the study. This means that these investments contribute to stimulating economic development (Tohma, 2015).

The study aims at measuring the effect of foreign investment on the economic growth in Jordan for the period 1990-2006. The study showed that foreign investment had no effect on economic growth. The study attributed the reason that such an effect may be need a longer period until foreign capital is apparent in the various economic sectors (Mohtasib, 2009).

A study of Ziad Abu Laila (2005) showed that foreign direct investment and imports played a positive role in the economic growth of Jordan during the period of study (1976-2003) and that there is a causal relationship in one direction of foreign direct investment towards domestic investment (Abu Laila, 2005).

3. Direct foreign investment in Jordan for the period 2000-2017

Jordan is an Arab country that suffers from a lack of natural resources and suffers from a permanent balance of payments deficit. Its successive governments have sought to reduce the investment gap by encouraging foreign investment. Foreign direct investment inflows varied during the period under consideration. In 2000, FDI inflows to Jordan totaled about $ 913.3 million, up to $ 1948.5 million in 2005 and a compound annual increase of 16.79% for the period 2000-2005. This increase continued to peak during the 2006 research period, with total foreign direct investment reaching $ 3544 million. In 2010, foreign investment inflows totaled $ 1688 million, a negative annual growth rate of -30.03% over the previous year. The period 2005-2010 saw a negative CAGR (Compound Annual Growth Rate) of 3.18%. This can be attributed to the regional conditions that followed the occupation of Iraq on the one hand and the decline in domestic demand due to the low purchasing power of the Jordanian citizen on the other hand.

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

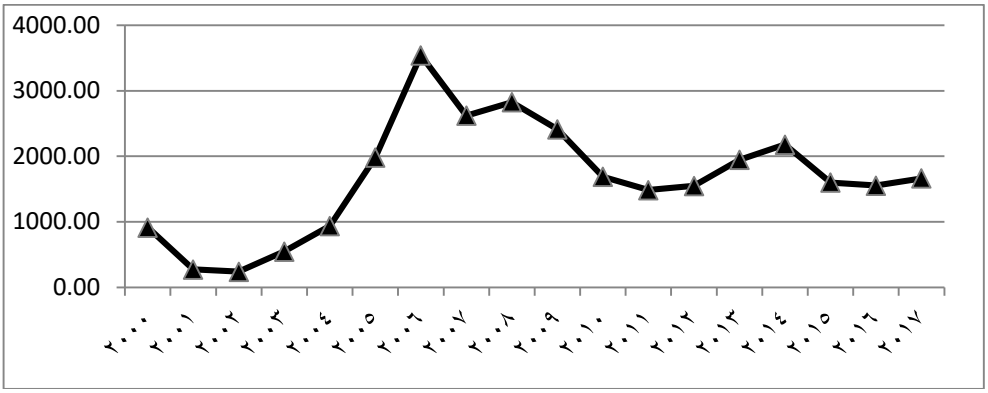

Figure (1)
Total foreign direct investment flows to Jordan for the period 2000-2017 (million dollars)
Source : Prepared by researcher based on data (UNCTAD, Databank)

In 2011, foreign direct investment flows continued to decline to reach US $ 1486 million with a negative annual growth rate of -11.98%. In subsequent years, foreign direct investment inflows started to peak in 2014 reaching $ 2178.45 million, an annual growth rate of 11.91% over 2013 and then declining again in 2015 to reach $ 1600.28 million and a negative annual growth rate of 26.54%, and the total annual compound growth rate for the period 2010-2015 was negative at 1.07%. In 2017, total FDI inflows to the Hashemite Kingdom of Jordan amounted to $ 1664.8 million and an annual growth rate of 7.2% over 2016. Overall, the research period 2000-2017 showed a positive compound annual growth rate of 12.76%. Figure (1) shows this.

The share of foreign direct investment in Jordan's gross domestic product (GDP) is illustrated in figure (2). The figure shows that the share of foreign investment in GDP reached 10.8% in 2000 and decreased in the following two years to reach 2.5% in 2002 and a negative annual growth rate of -18.5% from 2001. It started to rise again in 2003 and subsequent years, which reached 15.8% in 2005 and a compound annual growth rate of 7.9% for the period 2000-2005. The share of foreign direct investment in GDP continued to rise, reaching a peak of 23.5% in 2006, with an annual growth rate of 49.3% over 2005 and a compound annual growth rate of 40.6% for the period 2000-2006.

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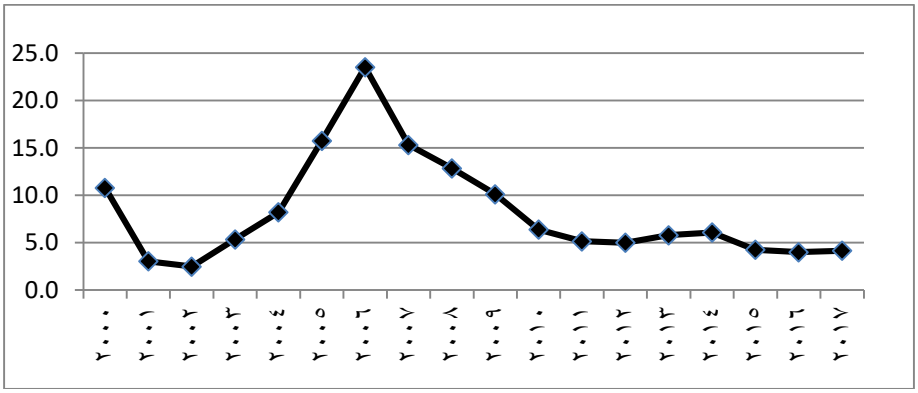

Figure (2)
Foreign direct investment inflows as a share of Jordan's GDP for the period 2000-2017 (percentage)

Source: Prepared by researcher based on data (UNCTAD, Databank)

From 2007, the share of foreign direct investment in GDP started to decline to reach 5% in 2012 with a negative annual growth rate of -2.9% over 2011 and a CAGR of 22.7% for the period from 2006 to 2012. In 2013, to reach 5.8% with an annual growth rate of 15.8% over 2012 and continued to rise in the following year to reach 6.1% with an annual growth rate of 4.9% over the previous year. In 2015, the contribution of foreign investment to GDP in Jordan decreased to 4.3% with a negative annual growth rate of 29.9% and a negative CAGR of 7.8% for the period 2010-2015. In 2016, the ratio dropped to 4%, in 2017 to 4.2% with an annual growth rate of 3.4%. The compound annual growth rate for the period 2000-2017 was negative and reached 5.5%.

Data on the sectorial distribution of foreign direct investment in Jordan for the period 2013-2017, found that the coal, oil and natural gas sector, renewable alternative energy sector, and real estate sector were the main economic sectors that acquired most of the investment projects as shown in Figure 3. That the concentration of foreign direct investment on the oil and natural gas sector can be attributed to the high cost of Jordan's imports in this sector, as the Jordanian imports of this sector in 2017 according to the statistics of the Arab Organization for Guarantee Investment and Export Credit 3,407 billion dollars.

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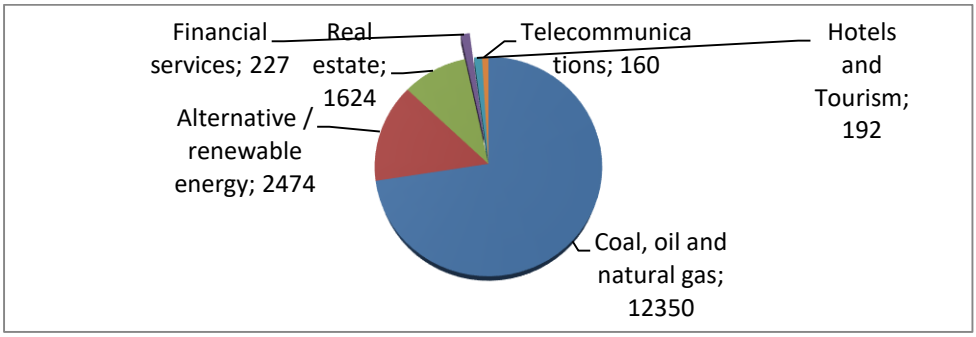

Figure (3)
Investment projects by economic sectors in Jordan for the period 2013-2017 (million dollars)
Source: Investment climate in Arab countries report 2018

These investments were distributed among several countries, the most important of which were Russia and Malaysia. Table 1 showed that the companies of these countries were among the top 5 companies investing in Jordan during the period 2013-2017 (Corporation, 2018).

Table (1)
Countries investing in Jordan for the period 2013-2017

Country	Cost (million USD)	Number of projects	Number of companies
Russia	10032	3	3
Malaysia	1600	1	1
Egypt	1129	1	1
United Arab Emirates	1039	18	13
Estonia	750	1	1
Saudi	749	4	2
Italy	443	3	3
Portugal	439	2	1
United State	288	13	13
Japan	220	1	1
Other	820	30	25
Total	17507	77	64

Source : Investment climate in Arab countries report 2018

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

4. The GDP in Jordan for the period 2000-2017

The GDP in Jordan was characterized during the period of research by the general increase in fixed prices for 2010, and current prices as shown in table (2) below. In 2000, the gross domestic product reached 8.4 billion dollars at current prices, equivalent to 14.3 billion dollars at constant prices for 2010. This output rose to about 12.6 billion dollars in 2005 at current prices and by 8.18% from the previous year. In 2010, gross domestic product (GDP) at current prices was approximately $ 26.4 billion and an annual growth rate of 2.31% over the previous year. The per capita income rose to $ 3,679 in 2010.

Table (2)

GDP in Jordan for the period 2000-2015

Year	Gross domestic product at constant prices for 2010 ($ million)	GDP Growth Rate (%)	Average per capita GDP at constant prices for 2010 ($)	Gross domestic product at current prices (Million) dollars)
2000	14339.97	4.25	2810.04	8460.42
2001	15095.49	5.27	2906.62	8975.69
2002	15968.69	5.78	3020.09	9582.45
2003	16633.15	4.16	3082.05	10195.66
2004	18058.17	8.57	3262.19	11411.39
2005	19529.29	8.15	3417.73	12588.67
2006	21109.86	8.09	3557.30	15056.93
2007	22835.74	8.18	3687.23	17110.59
2008	24487.32	7.23	3773.19	21972.00
2009	25828.38	5.48	3786.53	23820.23
2010	26425.38	2.31	3679.19	26425.38
2011	27108.95	2.59	3578.77	28840.26
2012	27827.65	2.65	3481.69	30937.28
2013	28614.83	2.83	3401.08	33593.84
2014	29500.84	3.10	3348.83	35826.93
2015	30206.41	2.39	3297.89	37517.41

Source: (UNCTAD, Databank)

In 2015, gross domestic product rose to 37.5 billion dollars at current prices, equivalent to 30.2 billion dollars at constant prices for 2010, and an average income of $ 3297 per capita. It is noted from the table that despite the increase in gross domestic product in 2015 for current and constant prices for the year 2010. But the average per capita has declined in 2015 from the years before and can be attributed to the

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

increase in the population from 8.804 million in 2014 to 9.559 million in 2015, thus it can be said that the increase in population was not accompanied by an increase in the same proportion of GDP (Planning, 2018).

5. Econometric models

This study was based on the endogenous growth theory that economic growth is primarily the result of the influence of endogenous rather than exogenous factors (Arrow , 1962). It is therefore assumed that foreign investment will contribute to the promotion of investment in human capital, innovation, knowledge, research and development (R&D), which contribute significantly to economic growth according to the studies conducted by (Romer, 1986) and (Lucas, 1988). In this study, we try to test the relationship between GDP and FDI flows, gross fixed capital formation (GFCF), domestic private sector credit (FD), and trade openness (TO).

Gross domestic product (GDP) was estimated based on its annual growth rate (%). FDI inflows were estimated based on their ratio to GDP; gross fixed capital formation was estimated on a percentage to GDP basis. The case of domestic private sector credit, which was estimated, based on its ratio to GDP (%), and trade openness was estimated by the result of total imports with exports divided by GDP (%). The data Collected from various sources including the World Bank, and the Department Jordan General Statistics.

Using the EViews10 method, the following equation estimated:

$$GDP = y_0 + y_1 FDI + y_2 CFCF + y_3 FD + y_4 TO + u_1 \ldots\ldots (1)$$

Whereas:

GDP: Annual GDP Growth Rate (%)

FDI: FDI inflows as percentage of GDP (%)

CFCF: Gross fixed capital formation as a share of GDP (%)

FD: Domestic credit to private sector as percentage of GDP (%)

TO: Trade openness (imports + exports) / GDP (%)

y: Regression coefficient

y_0: Constant

y_1, y_2 ……..y: Regression coefficient

u_1: Random error term

The time series should be stationary. In the case of instability, the gradient that we will get between the multiple variables in the time series will be a spurious regression. In other words, the mean and

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

variance of the variable will be independent of the time effect. One indication is the increase in the value of the R factor, the increased statistical significance of the estimated parameters t and F to a high degree, and the addition of autocorrelation. Stationary in the time series is therefore a key condition for accurate results that can be relied upon.

The time series can be considered stationary if the following conditions are satisfied (Abdelkader, 2000).

1. The variation shall be time-bound.
2. The average values are time-constant.
3. The common variation between any two values for one variable is based on the time gap between the two values rather than on the actual value of time.

To test the hypothesis of the research and validation of the standard model, the unit root test should be performed. In the applied studies, the time series have a problem of stationary (unit root). Here, Augment Dickey-Fuller (ADF) for unit root, and Phillips-Perron test.

In order to ensure acceptable results and the validity of the standard model, it is necessary to conduct a joint integration (cointegration) test, using the Granger model, through the following steps:

- Estimation of the regression of joint integration (cointegration) between the dependent and the independent variables in the long run, and the conditions for completion of this regression (Allawi & Rahi, 2013):

- All variables are stable at the same level.
- Residual (u_1) for the original model must be stationary, if we acceptance of the null hypothesis, that: (H_O: $\beta = 0$

It will be concluded that the estimated residuals of the original model are non-stationary because they contain the unit root, meaning there is no common integration between the model variables. If, in this test, the null hypothesis is rejected and the alternative hypothesis is accepted (H_1: $\beta \neq 0$), this means that the time series is non-stationary and that there is a cointegration between the variables of the model.

- The error correction model, in which case the model is estimated to test the relationship between the dependent variable and the independent, if there is a cointegration in the short-run, and then to introduce the estimated residuals as an independent variable at time lag-one.

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6. Analysis of results

The results obtained using the EViews program show the ADF test for the model variables is as in table 3. The table shows that all variables are non-stationary at their levels but become stationary when taking the second difference at the significance level (5%) according to the Augmented Dickey-Fuller test. Although the Dickey-Fuller test is commonly used, it suffers from the problem of autocorrelation between residuals. Therefore, the Philips and Pearson test is used to remedy this problem. Phillips and Pearson test give the same results of the Augmented Dickey-Fuller test .

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Table (3)
Results of the time series stationary test (ADF test)

(Augmented Dickey-Fuller) Unit Root Test												
	At level				1 st difference				st difference 2			
	Intercept	Trend and Intercept	None	Decision	Intercept	Trend and Intercept	None	Decision	Intercept	Trend and Intercept	None	Decision
Critical values 5 %	3.0521	3.7104	1.1962		4.1630	4.1499	4.2322		2.1876	2.0121	1.9709	
GDP	1.0263	2.1944	0.7751	non-stationary	3.0655	3.7332	1.9644	non-stationary	3.43008	3.85312	3.2432	stationary
FDI	1.5202	1.5642	1.1476	non-stationary	3.2957	3.3455	3.4420	non-stationary	3.1199	3.8289	2.3053	stationary
CFCF	1.6482	1.4308	0.3505	non-stationary	3.3405	3.6138	3.4576	non-stationary	6.15243	6.02458	6.38947	stationary
FD	1.4987	1.6406	0.0099	non-stationary	2.2856	2.5876	2.3728	non-stationary	3.76864	3.84962	3.97410	stationary
TO	0.2378	1.8175	1.2398	non-stationary	2.00146	3.54927	3.44821	non-stationary	3.18792	3.88612	2.41987	stationary

Source: Prepared by the researcher based on the EViews program

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The results of the residual stability of the original model showed that the residuals are stationary at all levels in all cases (Intercept trend, Intercept, and none) at the significance level of 5%.

The results of error correction model as shown in table 4 showed a short-term positive correlation between FDI and economic growth represented by GDP. The ta **.**
ble also shows that there is a positive correlation between economic growth and trade openness and that there is a relationship between the two variables in the short term. The model also shows a short-term negative relationship between the two variables, gross fixed capital formation as a share of GDP and domestic credit to the private sector as a proportion of GDP and economic growth.

The R2 value of 0.72 indicates that 72% of variations in the dependent variable are explained by the change in the independent variables. The value of the F test is significant because the value of Probability -F-statistic of 0.012310 is less than 5%. It is also evident that there is a relationship between model variables and economic growth over the long term due to the significance of the residual values of 0.0009, which are less than 5% and are negative.

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Table (4)
Test the short-term error correction model

Dependent Variable: DGDP2
Method: Least Squares
Date: 12/18/18 Time: 22:22
Sample (adjusted): 2002 2017
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.13321	4.629316	-3.052981	0.0110
DFDI	0.239930	0.078294	3.064465	0.0108
DCFCF	-0.148550	0.125212	-1.186393	0.2629
DFD	-0.009327	0.019408	-0.480587	0.6412
DTO	0.253865	0.108738	2.334646	0.0417
U(-1)	-2.015458	0.431321	-4.672758	0.0009

R-squared	0.725909	Mean dependent var	-0.066067
Adjusted R-squared	0.588864	S.D. dependent var	2.328760
S.E. of regression	1.493198	Akaike info criterion	3.919714
Sum squared resid	22.29641	Schwarz criterion	4.209435
Log likelihood	-25.35771	Hannan-Quinn criter.	3.934550
F-statistic	5.296855	Durbin-Watson stat	2.138122
Prob(F-statistic)	0.012310		

Source: Prepared by the researcher based on the EViews program

It can be ascertained that the residues were normally distributed in Figure 4, showing that the probability value of 0.642 is greater than 5%.

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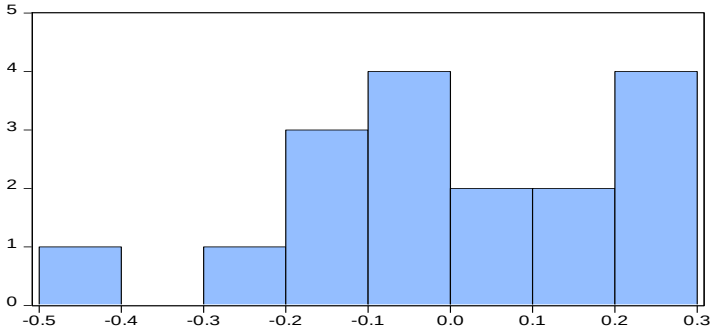

Figure (4)
Distribution of residuals
Source : Prepared by the researcher based on the EViews program

Using EViews version 10, and after validating the validity of the model statistically and economically, the formula equation was estimated as shown below:

Estimation Command:
==========
LS DGDP C DFDI DCFCF DFD DTO ……(2)

Estimation Equation:
==========
DGDP = C (2) + C(2)*DFDI + C(3) *DCFCF + C(4) *DFD + C(5)*DTO + C(6)*U(-1)…… ….(3)

Substituted Coefficients:
==========
DGDP = -14.133 + 0.240*DFD I - 0.149*DCFCF - 0.009*DFD + 0.254*DTO - 2.015*U (-1)…….. (4)

It can be concluded that economic growth is positively influenced by direct foreign investment, which confirms the hypothesis of research, which supports the prevailing view. Most studies have shown that there is a positive impact of FDI on employment, technological progress and productivity, which is generally, reflected in increased economic growth rates in the host country. As Jordan has a stable and encouraging investment infrastructure and environment, economic growth can be enhanced if government support is provided to encourage FDI.

ISSN : 1813-6729 http://doi.org/10.31272/JAE.42.2019.119.6

7. Conclusion

- Jordan is an Arab country that suffers from a lack of natural resources and suffers from a permanent deficit in its balance of payments. Successive governments have always sought to reduce the investment gap by encouraging foreign investment, which focused during the research period in the coal, oil and natural gas sector, renewable alternative energy sector, Real estate. The research period 2000-2017 witnessed a positive compound annual growth rate of 12.76% in total foreign direct investment flows in Jordan.
- The study showed that there is a positive effect of FDI flows on GDP in Jordan and that there is a positive correlation between FDI and economic growth in the short term represented by GDP. The study also showed a positive relationship between economic growth and trade openness and that there is a relationship between the two variables in the short term. And that there is an inverse relationship in the short term that links the two variables, gross fixed capital formation as a share of GDP and domestic credit to the private sector as a share of GDP and economic growth.

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